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For: **CARD PROCESSING DEVICE AND CARD PROCESSING METHOD**

SUBMISSION OF ENGLISH TRANSLATION OF FOREIGN REFERENCE

Commissioner for Patents
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Sir:

Submitted herewith is an English language translated copy of applied prior art reference Masataka et al. (JP 62-203624) for the Examiner's convenience.

In the event any fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

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SPECIFICATION

1. Title of the Invention

Transaction Information Processor

2. Claims

(1) A transaction information processor comprising:

a central processor that can input and output diagnostic information; and

a transaction device connected to the central processor and equipped with self-diagnosis means for self-diagnosing the occurrence of a malfunction,

wherein further comprising control means capable of exchanging the diagnostic information with both the central processor and the transaction device.

(2) The transaction information processor according to claim 1, wherein the diagnostic information comprises self-diagnosis command information transmitted from the central processor and self-diagnosis information for the transaction device.

3. Detailed Description of the Invention

[Object of the Invention]

(Field of Industrial Utilization)

The present invention relates to a transaction information processor having a transaction device which is connected to a central processor via a line, for example, and which conducts transactions based on the operations of the customer.

(Prior Art)

In a prior art, a transaction device used in a bank is connected to a center computer representing a central processor via a circuit, for example, and together with the central processor constitutes a transaction information processor.

When a transaction device starts a transaction according to the actions of the customer (usually the insertion of a card on which information corresponding to the customer is recorded), and after the customer subsequently completes input operations related to deposit and withdrawal transactions, such as the customer's personal identification number and the transaction amount, the transaction device communicates online with the center computer that constitutes the central processor, the center computer determines whether the transaction requested by the customer has succeeded or failed, and an instruction is sent online to the transaction information processor.

It is, however, impossible for conventional central processors to determine the occurrence of failures and other such malfunction states in the transaction device when, for example, a failure or other such malfunction occurs in the transaction device despite the fact that the center computer has communicated online to the transaction device that the transaction has succeeded. The result is that when the transaction device malfunctions, the malfunction state cannot be detected without the aid of an attendant managing the transaction device, and problems therefore arise in the

sense that adequate service cannot be provided to the customer, and the customer is dissatisfied.

(Problems to be solved by the Invention)

As described above, conventional transaction information processors waits for completion of the input operations of the transaction information for the customer operating the transaction device connected to the central processor, and then conducts online communication with the central processor connected to the transaction device to determine whether the transaction has succeeded, thus making it impossible for the central processor to determine the occurrence of malfunctions in the transaction device, and causing the transaction device to stop unless, for example, an attendant detects the malfunction.

Therefore, an object of the present invention is to provide a transaction information processor capable of communicating the occurrence of malfunctions to the central processor whenever malfunctions occur in the aforementioned transaction device.

[Summary of the Invention]

(Means for Resolving the Problems)

In view of this, the transaction information processor of the present invention is configured such that an online connection is established between a central processor that can input and output diagnostic information, and a transaction device equipped with self-diagnosis means for self-diagnosing the occurrence of a malfunction in the

central processor, and control means is provided for allowing the diagnostic information to be exchanged with both the central processor and the transaction device.

(Operation of the Invention)

The transaction information processor comprising the above-mentioned configuration has a transaction device connected to the central processor and control means capable of sending and receiving information, comprises self-diagnosis means for self-diagnosing the occurrence of a malfunction in the connected transaction device, and is equipped with control means for transmitting the self-diagnosis information obtained by the self-diagnosis means to the central processor, thus allowing the transaction device to conduct a self-diagnosis and to transmit the occurrence of malfunctions to the central processor on the basis of instructions from the central processor, for example.

Thus, the central processor can be informed of the occurrence of malfunctions in the transaction device.

(Embodiments)

First, the configuration of the transaction information processor of the present invention will be described with reference to Figs. 1 and 2.

In Fig. 1, 40 designates the transaction device.

The transaction device shown in the diagrams can be used to automatically withdraw cash using a transaction medium, for example, a cash card on which the customer's

account number, the account holder's name, or other such information is recorded.

The transaction device in the diagrams is configured such that a primary control unit 26A (shown in the diagrams) is connected to a card processing mechanism 24A for reading the information recorded on the inserted cash card and performing other functions, an invoice processing mechanism 24B for printing out the transaction specifics, a disbursement voucher processing mechanism 25 for processing a voucher corresponding to the transaction amount, an operating guidance display 4 for displaying the order of operations and the like to the customer operating the device, and an internal monitor 41.

The transaction device 40 is also configured to be capable of connecting with the central processor, for example, a center computer 42 (to be described later) in the bank's information processing center, using a circuit. The connection of the circuit is designed to be conducted by a circuit connector 26B based on a control signal from the primary control unit 26A provided to a control unit 26.

The control unit 26A functioning as the control means provided to the transaction device has a function for conducting self-diagnosis that detects the occurrence of malfunctions when it is determined that a malfunction has occurred in the aforementioned card processing mechanism 24A, invoice processing mechanism 24B, disbursement voucher processing mechanism 25, operating guidance display 4, or

the like; for example, when the card inserted by the customer has for some reason stopped while being conveyed in the card processing mechanism 24A.

The timing of the self-diagnosis is designed such that the transaction device 40 conducts a self-diagnosis of all its units whenever, for example, self-diagnosis command information is transmitted as the diagnostic information from the connected central processor 42. For example, when the transaction device is in a state of waiting for a customer, a test is performed on each unit constituting the transaction device and their normal operation is confirmed by the primary control unit 26A.

Based on the self-diagnosis command information, the transaction device conducts a self-diagnosis of each component previously described and transmits information about whether a malfunction has occurred to the central processor. The central processor is designed such that the self-diagnosis command information is transmitted, for example, to the transaction device at specific times if no malfunction has occurred, and that maintenance staff is notified, for example, when a malfunction has occurred.

The central processor 42 comprises a storage unit 42c for storing transaction information and other such various information corresponding to the customer's personal identification number, an interface 42a for connecting to the transaction device, and a control unit 42b as control means for controlling the recording of information inputted

into the recording unit 42c and controlling the exchange of diagnostic information with the transaction device via the interface 42a.

The control unit 42b has a function for controlling, for example, at specific times the transmission of the self-diagnosis command information as the diagnostic information for inducing a self-diagnosis in the connected transaction device, and each transaction device conduct a self-diagnosis on each unit based on this information.

Fig. 2 is an external perspective view of the transaction device 40 shown in Fig. 1.

In the figure, 1 is the case of the transaction device, and 2 is a top lid used when voucher storage is set, invoice setting is performed, or other such operations are conducted. An operating guidance display 4 for conversing with the customer is provided to the slanted part 3 on the front side of the top lid 2. The front part 5 of the case 1 is provided with a card slot 6 for inserting a cash card (hereinafter also referred to simply as a card) on which various information is recorded on the front, back, or both, and a voucher dispensing slot 7 for producing the specific voucher. These two components are shown on the left and right sides of the figure. The front side of the case 1 is also provided with customer detection means 9 for detecting customers approaching the apparatus. The customer detection means 9 can be suitably configured from, for example, a light sensor, an infrared sensor, an ultrasound sensor, a

high frequency wave proximity sensor, a capacity proximity sensor, or the like. The object shown by 8 in the diagram is a key for locking the top lid 2. A receipt dispensing slot 45 through which receipts are produced is linked to the information of the card slot 6.

One example of using the transaction device 40 configured as described above is as follows: first, the customer's presence is detected by the customer detection means 9 when the customer stands in front of the transaction device, and the device enters an active state and waits for a card to be inserted. Next, the information inputted to the connected central processor is confirmed whenever the card is inserted and a transaction amount in entered along with a personal identification number. After it is determined whether the transaction has succeeded, a voucher corresponding to the transaction cash amount is produced from the voucher dispensing slot 7 and the inserted card is ejected. The customer thus completes the transaction.

The central processor 42 pertaining to the present invention comprises a control unit 42b, which is control means that is intended to conduct a self-diagnosis of the previously described transaction device 40 and that has a function for receiving the self-diagnosis command information as diagnostic information. As previously described, the transaction device 40 also comprises a primary control unit 26A as control means capable of exchanging diagnostic information.

Therefore, the diagnostic information can be exchanged between the central processor 42 and the transaction device 40 even when, for example, the system is in a state of waiting for a customer or when a failure has occurred.

An embodiment thereof is described below with reference to Fig. 3.

The self-diagnosis command information for the transaction device is transmitted online from the center computer 42, which is the central processor. The self-diagnosis command information is transmitted sequentially to each transaction device at specific times, for example.

Meanwhile, the transaction device is queued to receive the self-diagnosis command information as diagnostic information from the central processor (step S_1). Upon receiving the self-diagnosis command information (step S_2), the transaction device then conducts a self-diagnosis (step S_3) and transmits the results of the diagnosis to the center computer by online communication (step S_4). When the self-diagnosis command information arrives while the transaction device is in the middle of a transaction, the command is implemented when the transaction is completed, for example.

When the central processor then determines from the results of the self-diagnosis that a malfunction has occurred (step S_5), the failure information is printed as an error (step S_6) and attendant management, for example, the maintenance staff, is notified.

Thus, the prior art does not allow the transaction device to be restored from a state in which the transaction device has ceased to function due to a failure or the like so long as an attendant does not discover that the transaction has ceased, whereas the transaction information processor of the present invention allows the transaction state to be monitored on the side of the central processor, and any problems with the transaction device to be quickly resolved.

Furthermore, an attendant need not be staffed to manage the transaction device when the bank is closed, for example, demonstrating remarkable results in that the transaction device can operate even when left unattended.

It is apparent, however that the embodiment described above is merely an example and that many variations can be made within the basic scope of the present invention.

The embodiment described above gives an example of an automated payment machine used in a bank or the like as the transaction device, but the present invention need not be limited thereto and can be applied in a vending machine for selling various goods or another such transaction device, for example. In the above-mentioned embodiment, the transaction device is designed to conduct a self-diagnosis based on the self-diagnosis command information from the central processor, but the transaction device may also be designed, for example, to conduct a self-diagnosis at

specific times and transmit the diagnosis results to the central processor.

[Merits of the Invention]

As described in detail above, the transaction device of the present invention has a central processor that can input and output diagnostic information, and a transaction device connected to the central processor and equipped with self-diagnosis means for self-diagnosing the occurrence of malfunctions, wherein equipping both the central processor and the transaction device with control means capable of exchanging the diagnostic information makes it possible to provide a transaction information processor that can communicate the occurrence of malfunctions to the central processor whenever the transaction device malfunctions.